Socket A Processor Mainboard

GA-7ZM

VIA KT133 Chipset

USER'S MANUAL

WARNING: *Never run the processor without the heatsink properly and firmly attached. PERMANENT DAMAGE WILL RESULT!*

Mise en garde : *Ne faites jamais tourner le processeur sans que le dissipateur de chaleur soit fixé correctement et fermement. UN DOMMAGE PERMANENT EN RÉSULTERA !*

Achtung: *Der Prozessor darf nur in Betrieb genommen werden, wenn der Wärmeableiter ordnungsgemäß und fest angebracht ist. DIES HAT EINEN PERMANENTEN SCHADEN ZUR FOLGE!*

Advertencia: *Nunca haga funcionar el procesador sin el disipador de calor instalado correcta y firmemente. ¡SE PRODUCIRÁ UN DAÑO PERMANENTE!*

Aviso: *Nunca execute o processador sem o dissipador de calor estar adequado e firmemente conectado. O RESULTADO SERÁ UM DANO PERMANENTE!*

警告：　将散热板牢固地安装到处理器上之前，不要运行处理器。过热将永远损坏处理器!

警告:　將散熱器牢固地安裝到處理器上之前，不要運行處理器 。過熱將永遠損壞處理器!

경고:　*히트싱크를 제대로 또 단단히 부착시키지 않은 채 프로세서를 구동시키지 마십시오. 영구적 고장이 발생합니다!*

警告:　*永久的な損傷を防ぐため、ヒートシンクを正しくしっかりと取り付けるまでは、プロセッサを動作させないようにしてください。*

Declaration of Conformity

We, Manufacturer/Importer
(full address)

G.B.T. Technology Träding GMbH
Ausschlager Weg 41, 1F, 20537 Hamburg, Germany

declare that the product
(description of the apparatus, system, installation to which it refers)

Mother Board
GA-7ZM

is in conformity with
(reference to the specification under which conformity is declared)
in accordance with 89/336 EEC-EMC Directive

☐ EN 55011	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM high frequency equipment	☐ EN 61000-3-2* ☒ EN60555-2	Disturbances in supply systems caused by household appliances and similar electrical equipment "Harmonics"
☐ EN55013	Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment	☐ EN61000-3-3* ☒ EN60555-3	Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations"
☐ EN 55014	Limits and methods of measurement of radio disturbance characteristics of household electrical appliances, portable tools and similar electrical apparatus	☒ EN 50081-1	Generic emission standard Part 1: Residual, commercial and light industry
		☒ EN 50082-1	Generic immunity standard Part 1: Residual, commercial and light industry
☐ EN 55015	Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaries	☐ EN 55081-2	Generic emission standard Part 2: Industrial environment
☐ EN 55020	Immunity from radio interference of broadcast receivers and associated equipment	☐ EN 55082-2	Generic immunity standard Part 2: Industrial environment
☒ EN 55022	Limits and methods of measurement of radio disturbance characteristics of information technology equipment	☐ ENV 55104	Immunity requirements for household appliances tools and similar apparatus
☐ DIN VDE 0855 ☐ part 10 ☐ part 12	Cabled distribution systems; Equipment for receiving and/or distribution from sound and television signals	☐ EN 50091- 2	EMC requirements for uninterruptible power systems (UPS)
☒ CE marking		CE (EC conformity marking)	

The manufacturer also declares the conformity of above mentioned product with the actual required safety standards in accordance with LVD 73/23 EEC

☐ EN 60065	Safety requirements for mains operated electronic and related apparatus for household and similar general use	☐ EN 60950	Safety for information technology equipment including electrical business equipment
☐ EN 60335	Safety of household and similar electrical appliances	☐ EN 50091-1	General and Safety requirements for uninterruptible power systems (UPS)

Manufacturer/Importer

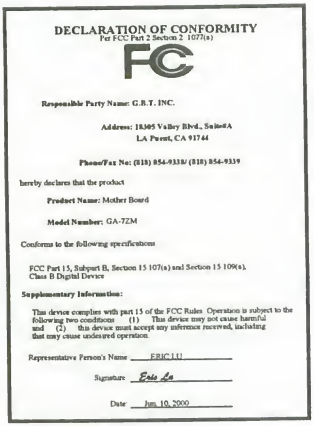
(Stamp)

Date : Jun. 10, 2000

Signature : *Rex Lin*

Name : Rex Lin

FCC Compliance Statement:



DECLARATION OF CONFORMITY
Per FCC Part 2 Section 2 1077(a)

FC

Responsible Party Name: G.B.T. INC.

Address: 18305 Valley Blvd., Suite#A
LA Puent, CA 91744

Phone/Fax No: (818) 854-9338/ (818) 854-9339

hereby declares that the product

Product Name: Mother Board

Model Number: GA-7ZM

Conforms to the following specifications

FCC Part 15, Subpart B, Section 15 107(a) and Section 15 109(a), Class B Digital Device

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful and (2) this device must accept any inference received, including that may cause undesired operation.

Representative Person's Name: ERIC LU

Signature: Eric Lu

Date: Jun. 10, 2000

This equipment has been tested and found to comply with limits for a Class B digital device , pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna

-Move the equipment away from the receiver

-Plug the equipment into an outlet on a circuit different from that to which the receiver is connected

-Consult the dealer or an experienced radio/television technician for additional suggestions

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void Your authority to operate such equipment.

This device complies with Part 15 of the FCC Rules. Operation is subjected to the following two conditions 1) this device may not cause harmful interference and 2) this device must accept any interference received, including interference that may cause undesired operation.

7ZM

AMD™ Athlon AGP Motherboard

USER'S MANUAL

AMD™ Athlon Socket A Processor Motherboard
REV. 2.2 Fourth Edition
R-22-04-000831

How This Manual Is Organized

This manual is divided into the following sections:

1) Revision History	Manual revision information
2) Item Checklist	Product item list
3) Features	Product information & specification
4) Hardware Setup	Instructions on setting up the motherboard
5) Performance & Block Diagram	Product performance & block diagram
6) Suspend to RAM	Instructions STR installation
7) BIOS Setup	Instructions on setting up the BIOS software
8) Appendix	General reference

Table Of Content

Revision History

Revision	Revision Note	Date
2.2	Initial release of the 7ZM motherboard user's manual.	May.2000
2.2	Second release of the 7ZM motherboard user's manual.	Jun.2000
2.2	Third release of the 7ZM motherboard user's manual.	Jul.2000
2.2	Fourth release of the 7ZM motherboard user's manual.	Aug.2000

Aug. 31, 2000 Taipei, Taiwan, R.O.C

Item Checklist

☑The 7ZM motherboard

☑Cable for IDE / floppy device

☑Diskettes or CD (TUCD) for motherboard driver & utility

☐Internal USB Cable (Optional)

☐Cable for SCSI device

☑7ZM user's manual

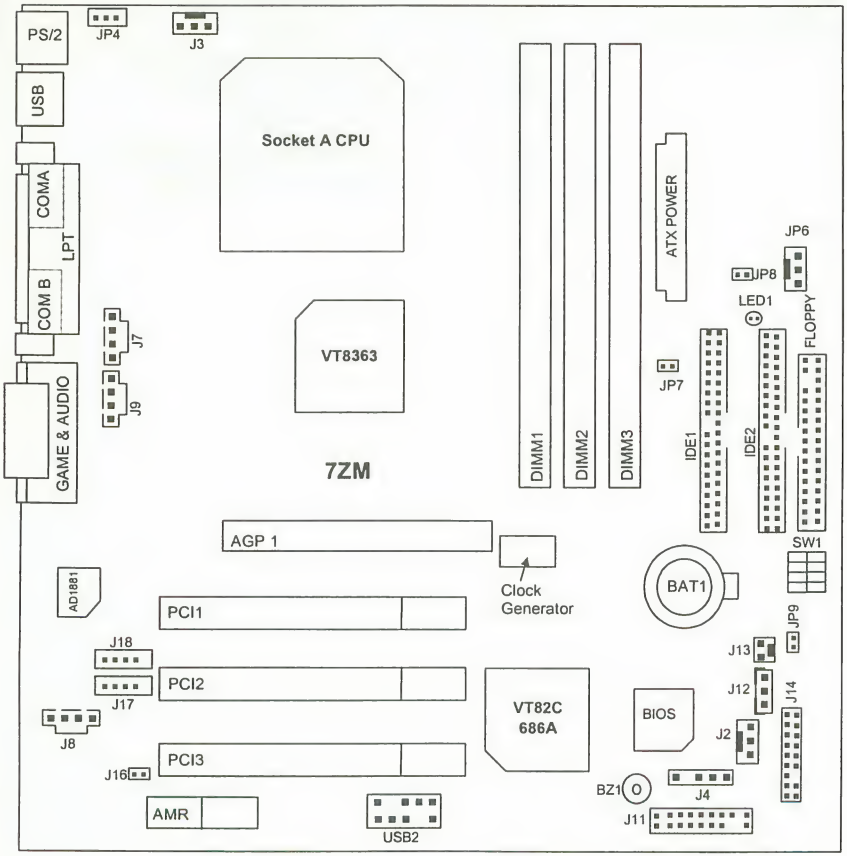
Summary Of Features

Form Factor	• 24.3 cm x 22.6 cm Micro ATX size form factor, 4 layers PCB.
CPU	• AMD Athlon (K7) Socket A Processor • 256K/64K 2nd cache on die • Supports 500MHz ~ 1GHz and faster
Chipset	Apollo KT133 ,consisting of: • VT8363 Memory/AGP/PCI Controller(PAC) • VT82C686A PCI Super-I/O Integrated Peripheral Controller (PSIPC)
Clock Generator	• ICS 9248-141 or ICW W230 • ICS 9248-141 100/105/110/113/115/117/133 MHz system bus speeds • ICW W230 100/102/104/106/108/110/112/133 MHz system bus speeds
Memory	• 3 168-pin DIMM sockets. • Supports PC-100 / PC-133 SDRAM and VCM SDRAM • Supports up to 1.5GB DRAM • Supports only 3.3V SDRAM DIMM
I/O Control	• VT82C686A
Slots	• 1 AGP slot supports 4X mode & AGP 2.0 compliant • 3 PCI slot supports 33MHz & PCI 2.2 compliant • 1 AMR(Audio Modem Riser) slot
On-Board IDE	• 2 IDE bus master (DMA 33/ ATA 66)IDE ports for up to 4 ATAPI devices • Supports PIO mode 3, 4 (UDMA 33/ATA 66) IDE & ATAPI CD-ROM
On-Board Peripherals	• 1 floppy port supports 2 FDD with 360K, 720K,1.2M, 1.44M and 2.88M bytes • 1 parallel ports supports Normal/EPP/ECP mode • 2 serial ports (COM A & COM B) • 4 USB ports • 1 IrDA connector for Fast IrDA
Hardware Monitor	• CPU/System fan revolution detection • CPU/Power/System fan control • System voltage detection (Vcore, Vdd ,Vcc3,+5V,+12V) • CPU overheat shutdown detection • CPU/System temperature detection.

To be continued...

PS/2 Connector	• PS/2® Keyboard interface and PS/2® Mouse interface
BIOS	• Licensed AMI BIOS, 2M bit flash ROM
Additional Features	• Support Wake-On-LAN (WOL) • Support Internal / External Modem Ring On • Support USB KB/MS Wake up from S3 • Includes 3 fan power connectors • Poly fuse for keyboard over-current protection • Support STR (Suspend-To-RAM) function

7ZM Motherboard Layout



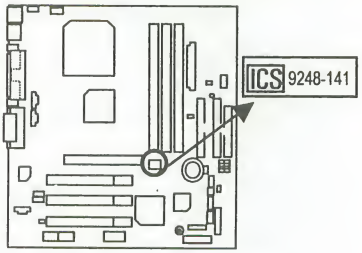
CPU Speed Setup

The system bus speed is selectable at 100~133MHz. The user can select the system bus speed by DIP switch **SW1**.

●If your clock generator (in Motherboard) is **ICS 9248-141.** You can follow the below reference.

SW1: (ICS 9248-141) **O : ON, X : OFF**

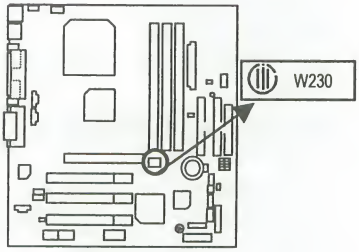
FSB	1	2	3	4
95	O	O	X	O
100	X	O	X	X
105	X	O	O	X
110	O	X	O	X
113	X	X	O	O
115	X	X	X	O
117	X	X	O	X
133	X	X	X	X



●If your clock generator (in Motherboard) is **ICW W230.** You can follow the below reference.

SW1: (ICW W230) **O : ON, X : OFF**

FSB	1	2	3	4
95	O	O	X	X
100	O	X	X	X
102	O	O	O	X
104	X	X	X	O
106	O	X	X	O
108	O	O	X	O
110	O	X	O	O
112	O	O	O	O
133	O	X	O	X



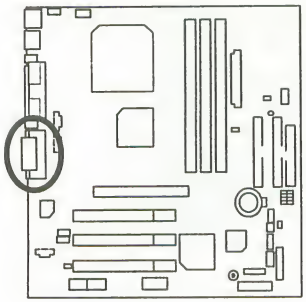
AMD CPU Heat Sink Installation:

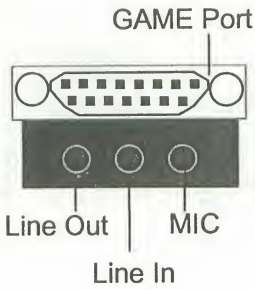
Beware: Please check that the heat sink is in good contact with the CPU before you turn on your system.

The poor contact will cause over heat, and might cause damage to your processor.

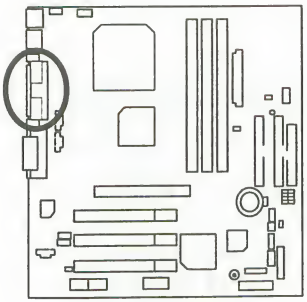
Connectors

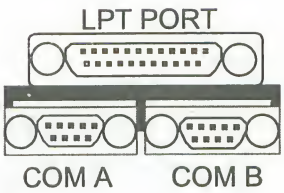
Game & Audio Port



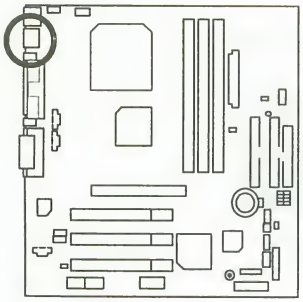


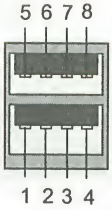
COM A / COM B / LPT Port





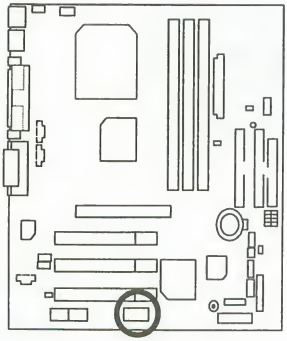
USB 1 Connector

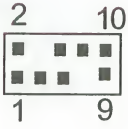




Pin No.	Definition
1	USB V0
2	USB D0-
3	USB D0+
4	GND
5	USB V1
6	USB D1-
7	USB D1+
8	GND

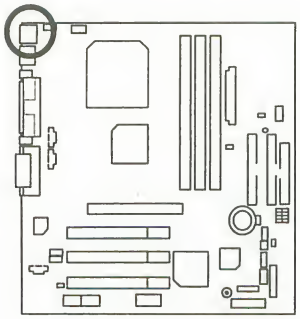
USB 2 Connector

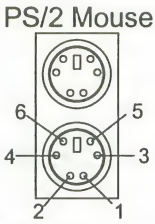




Pin No.	Definition
1	5V-SB
2	GND
3	USB D2-
4	NC
5	USB D2+
6	USB D3+
7	NC
8	USB D3-
9	GND
10	5V-SB

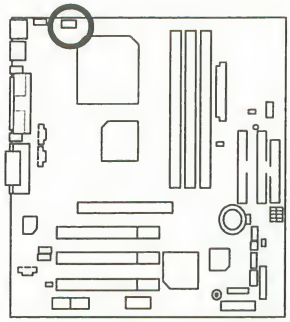
PS/2 Keyboard & PS/2 Mouse Connector





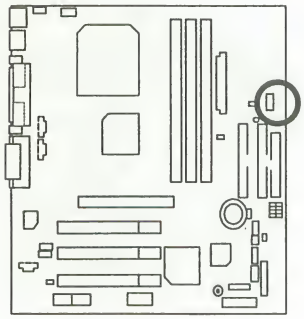
PS/2 Mouse/Keyboard	
Pin No.	Definition
1	Data
2	NC
3	GND
4	VCC(+5V)
5	Clock
6	NC

J3: CPU Fan



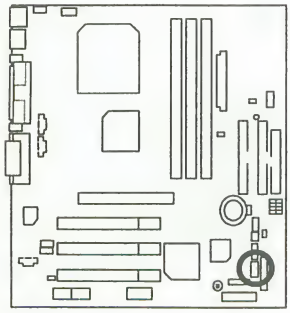
Pin No.	Definition
1	Control
2	+12V
3	SENSE

JP6: Power Fan



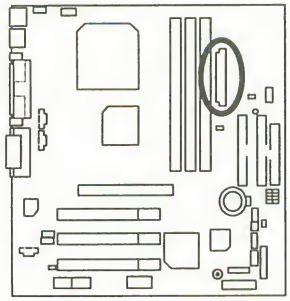
Pin No.	Definition
1	Control
2	+12V
3	NC

J2: Sysem Fan



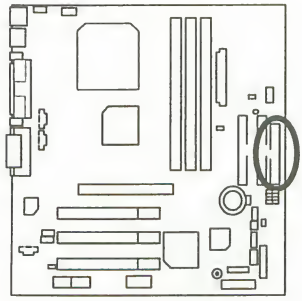
Pin No.	Definition
1	Control
2	+12V
3	SENSE

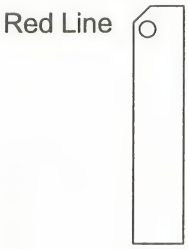
ATX Power



Pin No.	Definition
3,5,7,13, 15-17	GND
1,2,11	3.3V
4,6,19,20	VCC
10	+12V
12	-12V
18	-5V
8	Power Good
9	5V SB stand by+5V
14	PS-ON(Soft On/Off)

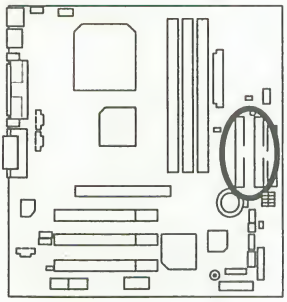
Floppy Port

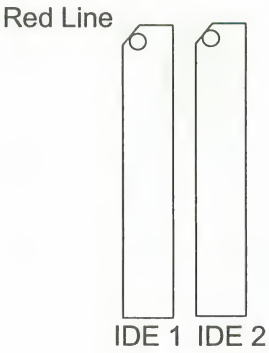




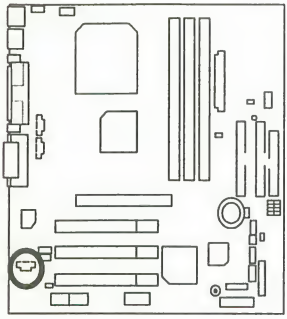
FDD1

IDE1(Primary), IDE2(Secondary) Port



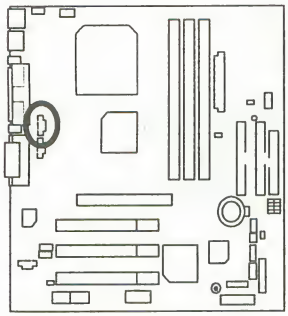


J8 TEL: The connector is for Modem with internal voice connector



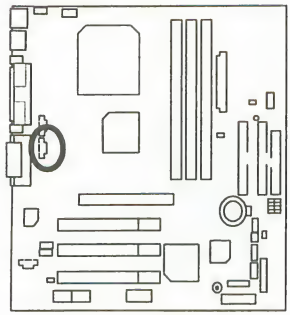
Pin No.	Definition
1	Signal-In
2	GND
3	GND
4	Signal-Out

J7 : AUX_IN



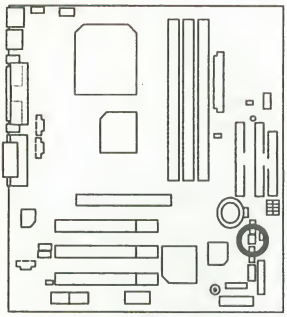
Pin No.	Definition
1	AUX-L
2	GND
3	GND
4	AUX-R

J9 : CD Audio Line In



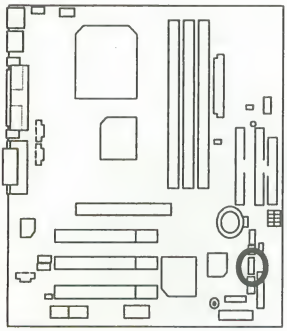
Pin No.	Definition
1	CD-L
2	GND
3	GND
4	CD-R

J13 : Ring Power On (Internal Modem Card Wake Up)



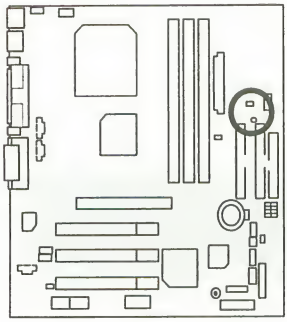
Pin No.	Definition
1	Signal
2	GND

J12: Wake On LAN



Pin No.	Definition
1	+5V SB
2	GND
3	Signal

JP8 / LED1: STR LED Connector & DIMM LED

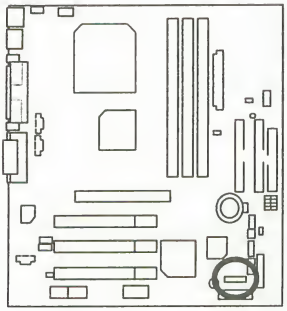


STR LED Connector External.

1 ■ ■

\+ ●● DIMM LED

J4: IR

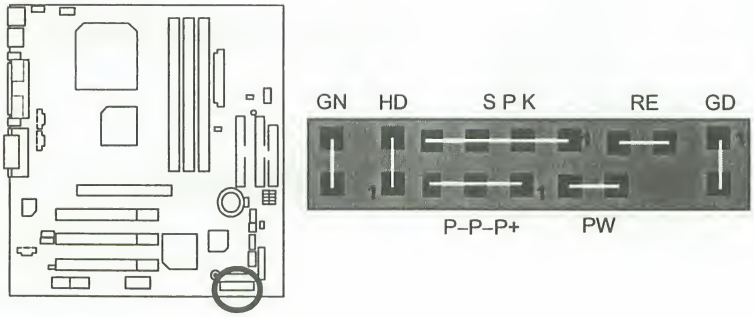


1 ■ ■ ■ ■

Pin No.	Definition
1	VCC (+5V)
2	NC
3	IR Data Input
4	GND
5	IR Date Output

Panel and Jumper Definition

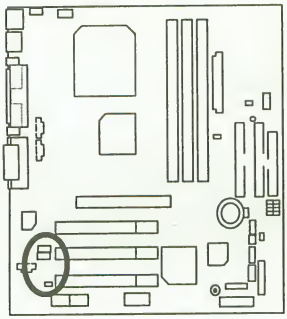
J2 : 2x11 Pins Jumper

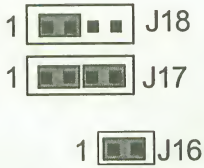


GN (Green Switch)	Open: Normal Operation Close: Entering Green Mode
GD (Green LED)	Pin 1: LED anode(+) Pin 2: LED cathode(–)
HD (IDE Hard Disk Active LED)	Pin 1: LED anode(+) Pin 2: LED cathode(–)
SPK (Speaker Connector)	Pin 1: VCC(+) Pin 2- Pin 3: NC Pin 4: Data(–)
RE (Reset Switch)	Open: Normal Operation Close: Reset Hardware System
P+P–P–(Power LED)	Pin 1: LED anode(+) Pin 2: LED cathode(–) Pin 3: LED cathode(–)
PW (Soft Power Connector)	Open: Normal Operation Close: Power On/Off

J16 /J17/J18 : AMR (Primary or Secondary) Select (Optional)

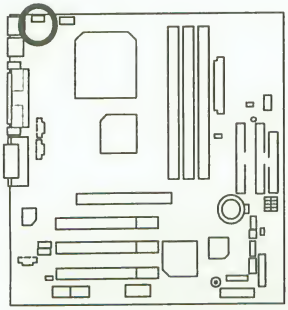
(AMR→ Audio Modem Riser)





	J16	J17	J18
Onboard AC97	ON	1-2	1-2
AMR (Primary)	OFF	3-4	3-4
Onboard AC97 MR (Secondary) (Default)	ON	1-2 3-4	1-2

JP4 :USB Device Wake up Selection

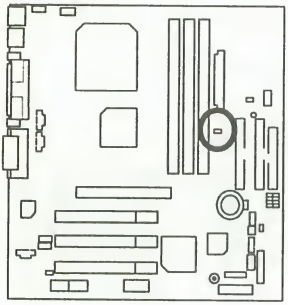


Pin No.	Definition
1-2 Close	Normal (Default)
2-3 Close	USB Device Wake up

(If you want to use **"USB Dev Wakeup from S3~S5"** function, you have to set the BIOS setting "USB Dev Wakeup from S3~S5" enabled, and the jumper **"JP4"** enabled)

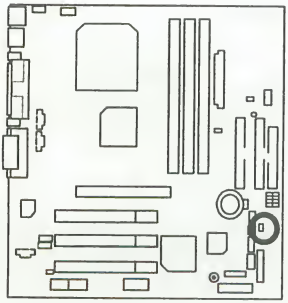
*(Power on the computer and as soon as memory counting starts, press <Del>. You will enter BIOS Setup. Select the item **"POWER MANAGEMENT SETUP"**, then select **"USB Dev Wakeup from S3~S5"**. Remember to save the setting by pressing "ESC" and choose the "SAVE & EXIT SETUP" option.)

JP7:STR Function Enabled



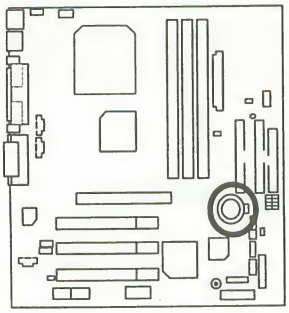
Pin No.	Definition
Open	Normal (Default)
Close	STR Enabled

JP9 : Write Protect Function



Pin No.	Definition
ON	Write Protect Enable
OFF	Write Protect Disable (Default)

BAT1 : Battery



- ☞ Danger of explosion if battery is incorrectly replaced.
- ☞ Replace only with the same or equivalent type recommended by the manufacturer.
- ☞ Dispose of used batteries according to the manufacturer's instructions.

Performance List

The following performance data list is the testing results of some popular benchmark testing programs.

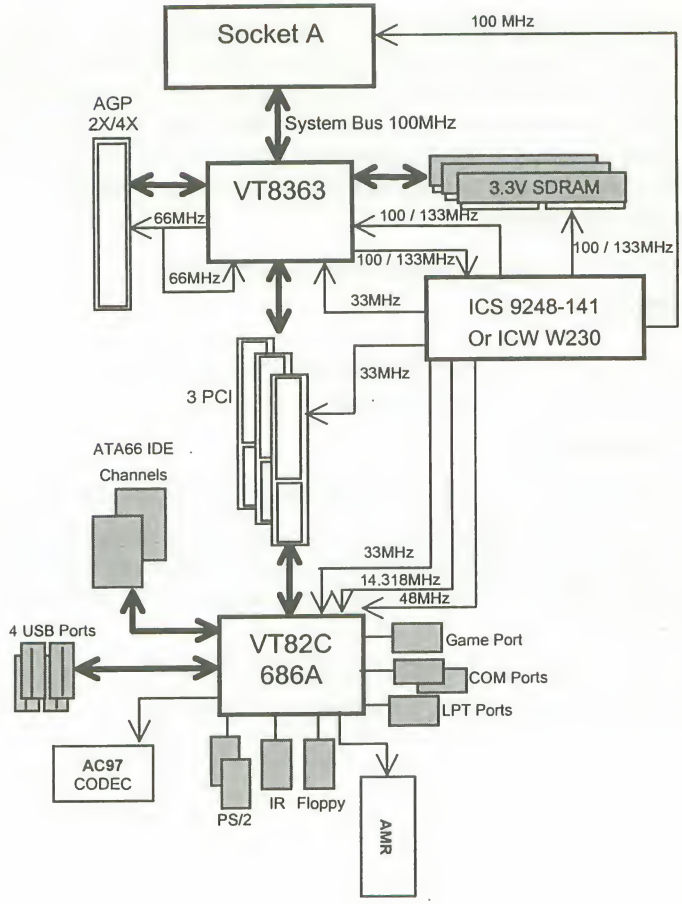
These data are just referred by users, and there is no responsibility for different testing data values gotten by users. (The different Hardware & Software configuration will result in different benchmark testing results.)

- CPU — AMD K7 Athlon(Thunderbird) 950MHz processor
- DRAM — (64x2) MB SDRAM (Mosel 9928PR V54C365804VCT7)
- CACHE SIZE — 256KB included in CPU
- DISPLAY — Gigabyte GF2000 DDR
- STORAGE — Onboard IDE (IBM-DTLA-307045)
- O.S. — Windows NT™ 4.0 SP6a
- DRIVER — Display Driver at 1024 x 768 x 64K colors x 75Hz.
  VIA driver 4 in 1 ver. 4.23A

Processor	AMD Athlon (Thunderbird) 950 (100x9.5)
Winbench99	
CPU mark 99	86.5
FPU Winmark 99	5210
Business Disk Winmark 99	8390
Hi-End Disk Winmark 99	21100
Business Graphics Winmark 99	490
Hi-End Graphics Winmark 99	1030
Winstone99	
Business Winstone 99	50.1
Hi-End Winstone 99	58.5

If you wish to maximize the performance of your system, please refer to the detail on P.39

Block Diagram



Suspend To RAM Installation

A.1 Introduce STR function:

Suspend-to-RAM (STR) is a Windows 98 ACPI sleep mode function. When recovering from STR (S3) sleep mode, the system is able, in just a few seconds, to retrieve the last "state" of the system before it went to sleep and recover to that state. The "state" is stored in memory (RAM) before the system goes to sleep. During STR sleep mode, your system uses only enough energy to maintain critical information and system functions, primarily the system state and the ability to recognize various "wake up" triggers or signals, respectively.

A.2 STR function Installation

Please use the following steps to complete the STR function installation.

Step-By-Step Setup

Step 1:

To utilize the STR function, the system must be in Windows 98 ACPI mode.

Putting Windows 98 into ACPI mode is fairly easy.

Setup with Windows 98 CD:

A. Insert the Windows 98 CD into your CD-ROM drive, select Start, and then Run.

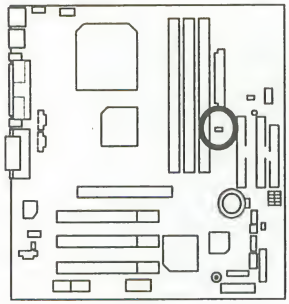
B. Type (without quotes) **"D:\setup /p j"** in the window provided. Hit the enter key or click OK. 『In Windows 98 second edition version, all the bios version dated 12/01/99 or later are ACPI compatible. Just type" D:\Setup", the operating system will be installed as ACPI mode.』

C. After setup completes, remove the CD, and reboot your system

(This manual assumes that your CD-ROM device drive letter is D:).

Step 2:

(If you want to use STR Function, please set jumper JP7 Closed.)



Pin No.	Definition
Open	Normal (Default)
Close	STR Enabled

Step 3:

Power on the computer and as soon as memory counting starts, press <Del>. You will enter BIOS Setup. Select the item **"POWER MANAGEMENT SETUP",** then select **"ACPI Sleep Type : S3 / STR"**. Remember to save the settings by pressing "ESC" and choose the **"SAVE & EXIT SETUP"** option.

Congratulation! You have completed the installation and now can use the STR function.

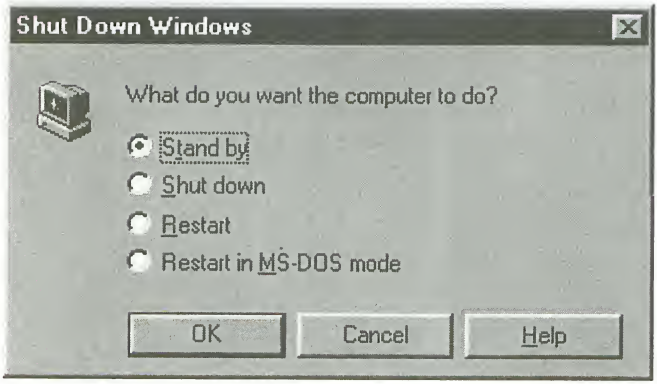
A.3 How to put your system into STR mode?

There are two ways to accomplish this:

1. Choose the "Stand by" item in the "Shut Down Windows" area.

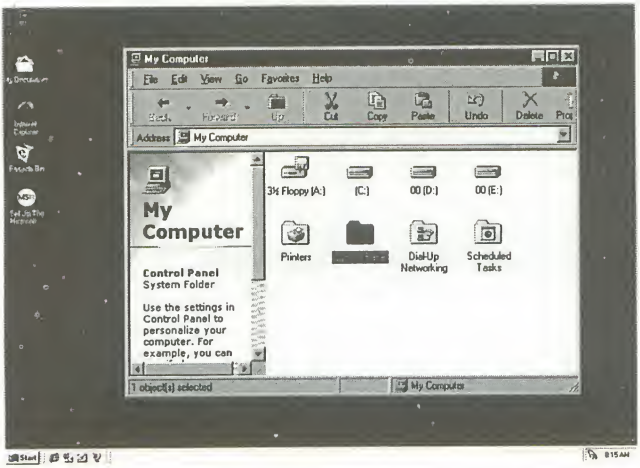
   A. Press the "Start" button and then select "Shut Down"

   B. Choose the "Stand by" item and press "OK"

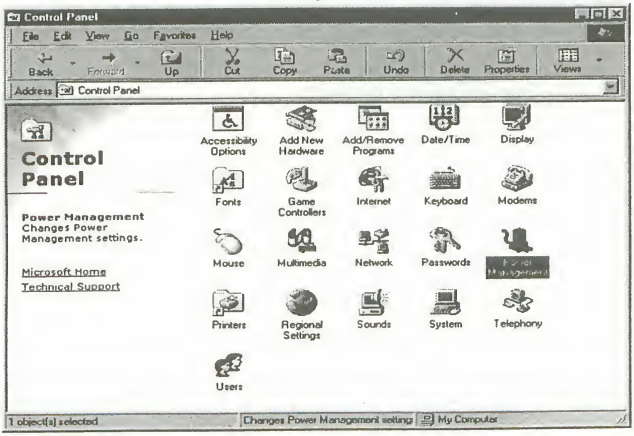


2. Define the system "power on" button to initiate STR sleep mode:

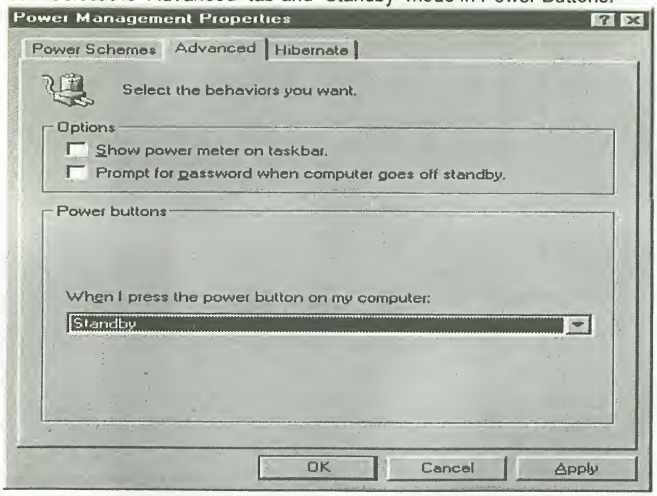
A. Double click "My Computer" and then "Control Panel"



B. Double click the " Power Management" item.



C. Select the "Advanced" tab and "Standby" mode in Power Buttons.



Step 4:

Restart your computer to complete setup.

Now when you want to enter STR sleep mode, just momentarily press the "Power on" button.

A.4 How to recover from the STR sleep mode?

There are five ways to "wake up" the system:

1. Press the "Power On" button.
2. Use the "Resume by Alarm" function.
3. Use the "Modem Ring On" function.
4. Use the "Wake On LAN" function.
5. Use the "USB Device Wake up"function

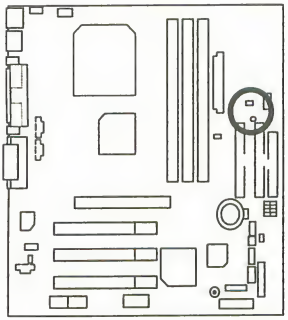
A.5 Notices :

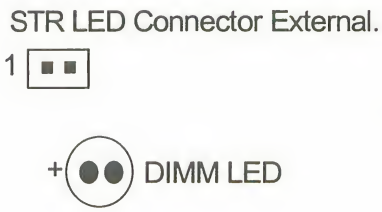
1. In order for STR to function properly, several hardware and software requirements must be satisfied:

   A. Your ATX power supply must comply with the ATX 2.01 specification (provide more than 720 mA 5V Stand-By current).

   B. Your SDRAM must be PC-100 compliant.

2. Jumper JP8 is provided to connect to the STR LED in your system chassis. [Your chassis may not provide this feature.] The STR LED will be illuminated when your system is in STR sleep mode.





Memory Installation

The motherboard has 3 dual inline memory module (DIMM) sockets. The BIOS will automatically detects memory type and size. To install the memory module, just push it vertically into the DIMM Slot .The DIMM module can only fit in one direction due to the two notch. Memory size can vary between sockets.

Install memory in any combination table:

DIMM	168-pin SDRAM DIMM Modules	
DIMM 1	Supports 16 / 32 / 64 / 128 / 256 / 512 MB	X 1 pcs
DIMM 2	Supports 16 / 32 / 64 / 128 / 256 / 512 MB	X 1 pcs
DIMM 3	Supports 16 / 32 / 64 /128 / 256 / 512 MB	X 1 pcs

★Total System Memory (Max 1.5GB)

BIOS Setup

BIOS Setup is an overview of the BIOS Setup Program. The program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

ENTERING SETUP

Power ON the computer and press <Del> immediately will allow you to enter Setup. If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" bottom on the system case. You may also restart by simultaneously press <Ctrl> – <Alt>– <Del> keys.

CONTROL KEYS

<↑>	Move to previous item
<↓>	Move to next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Esc>	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
<+/PgUp>	Increase the numeric value or make changes
<-/PgDn>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F2>	Reserved
<F3>	Reserved
<F4>	Reserved
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
<F7>	Load the Setup Defaults.
<F8>	Reserved
<F9>	Reserved
<F10>	Save all the CMOS changes, only for Main Menu

GETTING HELP

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu / Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

The Main Menu

Once you enter AMI BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from nine setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

AMIBIOS SIMPLE SETUP UTILITY-VERSION 1.22 (C) 1999 American Megatrends, Inc. All Rights Reserved	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	HARDWARE MONITOR SETUP
CHIPSET FEATURES SETUP	SUPERVISOR PASSWORD
POWER MANAGEMENT SETUP	USER PASSWORD
PNP/PCI CONFIGURATION	IDE HDD AUTO DETECTION
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit ↑↓←→ : Select Item (Shift) F2 : Change Color F5 : Old Values F6 : Load BIOS Defaults F7: Load Setup Defaults F10: Save & Exit	
Time, Date, Hard Disk Type, ...	

Figure 1: Main Menu

- **Standard CMOS Setup**

  This setup page includes all the items in standard compatible BIOS.

- **BIOS Features Setup**

  This setup page includes all the items of AMI special enhanced features.

- **Chipset Features Setup**

  This setup page includes all the items of chipset special features.

- **Power Management Setup**

  This setup page includes all the items of Green function features.

- **PnP/PCI Configurations**

  This setup page includes all the configurations of PCI & PnP ISA resources.

- **Load BIOS Defaults**

  Bios Defaults indicates the value of the system parameter which the system would be in the safe configuration.

- **Load Setup Defaults**

  Setup Defaults indicates the value of the system parameter which the system would be in the most appropriate configuration.

- **Integrated Peripherals**

  This setup page includes all onboard peripherals.

- **Hardware Monitor Setup**

  This setup page is auto detect fan and temperature status.

- **Supervisor password**

  Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

- **User password**

  Change, set, or disable password. It allows you to limit access to the system.

- **IDE HDD auto detection**

  Automatically configure hard disk parameters.

- **Save & Exit Setup**

  Save CMOS value settings to CMOS and exit setup.

- **Exit Without Saving**

  Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

The items in Standard CMOS Features Menu (Figure 2) are divided into 9 categories. Each category includes no, one or more than one setup items. Use the arrows to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

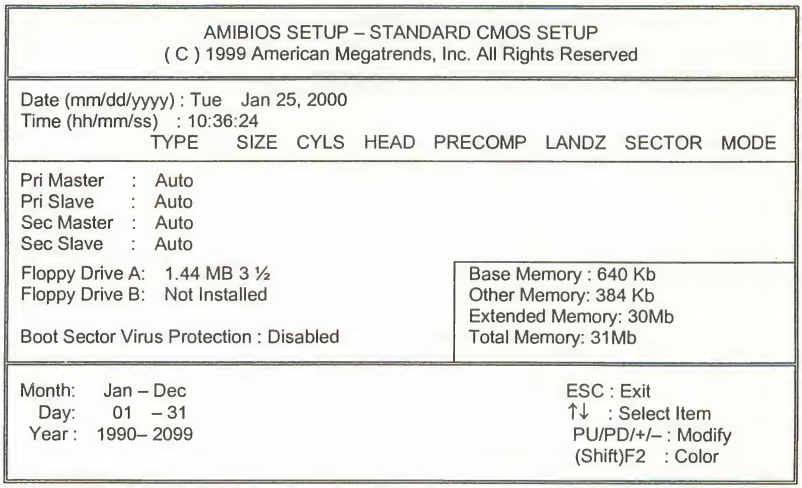


Figure 2: Standard CMOS Setup

- **Date**

The date format is <Week>, <Month>, <Day>, <Year>.

Week	The week, from Sun to Sat, determined by the BIOS and is display-only
Month	The month, Jan. Through Dec.
Day	The day, from 1 to 31 (or the maximum allowed in the month)
Year	The year, from 1990 through 2099

- **Time**

  The times format in <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Primary Master, Slave / Secondary Master, Slave**

  The category identifies the types of hard disk from drive C to F that has been installed in the computer. There are two types: auto type, and user definable type. User type is user-definable; Auto type which will automatically detect HDD type.

  Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category.

  If you select User Type, related information will be asked to enter to the following items. Enter the information directly from the keyboard and press <Enter>. Such information should be provided in the documentation form your hard disk vendor or the system manufacturer.

CYLS.	Number of cylinders
HEADS	number of heads
PRECOMP	write precomp
LANDZONE	Landing zone
SECTORS	number of sectors

If a hard disk has not been installed select NONE and press <Enter>.

- **Drive A type / Drive B type**

The category identifies the types of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K, 5.25 in.	5.25 inch PC-type standard drive; 360K byte capacity.
1.2M, 5.25 in.	5.25 inch AT-type high-density drive; 1.2M byte capacity (3.5 inch when 3 Mode is Enabled).
720K, 3.5 in.	3.5 inch double-sided drive; 720K byte capacity
1.44M, 3.5 in.	3.5 inch double-sided drive; 1.44M byte capacity.
2.88M, 3.5 in.	3.5 inch double-sided drive; 2.88M byte capacity.

- **Boot Sector Virus Protection**

If it is set to enable, the category will flash on the screen when there is any attempt to write to the boot sector or partition table of the hard disk drive. The system will halt and the following error message will appear in the mean time. You can run anti-virus program to locate the problem.

Enabled	Activate automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table
Disabled	No warning message to appear when anything attempts to access the boot sector or hard disk partition table. **(Default Value)**

- **Memory**

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

The value of the base memory is typically 512 K for systems with 512 K memory installed on the motherboard, or 640 K for systems with 640 K or more memory installed on the motherboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST.

This is the amount of memory located above 1 MB in the CPU's memory address map.

Other Memory

This refers to the memory located in the 640 K to 1024 K address space. This is memory that can be used for different applications.

DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM

BIOS Features Setup

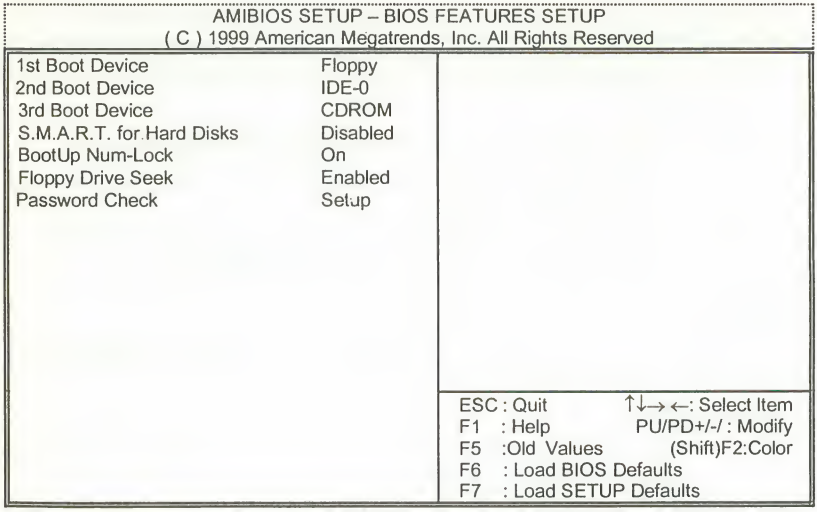


Figure 3: BIOS Features Setup

- **1st / 2nd / 3rd Boot Device**

  The default value is Floppy or LS-120 / ZIP A: or ATAPI ZIP C: or CDROM or SCSI or NET WORK / I20 or IDE-0~IDE-3 or Disabled.

Floppy	Boot Device by Floppy.
LS-120 / ZIP A:	Boot Device by LS-120 / ZIP A:.
CDROM	Boot Device by CDROM.
SCSI	Boot Device by SCSI.
NETWORK	Boot Device by NETWORK.
IDE-0~IDE-3	Boot Device by IDE-0~IDE-3.
Disabled	Boot Device by Disabled.
ATAPI ZIP C:	Boot Device by ATAPI ZIP C:.

- **S.M.A.R.T. for Hard Disks**

Enable	Enable S.M.A.R.T. Hard for Disks.
Disable	Disable S.M.A.R.T. Hard for Disks. **(Default Value)**

- **Boot Up Num-Lock**

On	Keypad is number keys. **(Default Value)**
Off	Keypad is arrow keys.

- **Floppy Drive Seek**

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360 type is 40 tracks while 720 , 1.2 and 1.44 are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720, 1.2 or 1.44 drive type as they are all 80 tracks. **(Default Value)**
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360.

- **Password Check**

Setup	Set Password Check to Setup. **(Default Value)**
Always	Set Password Check to Always.

Chipset Features Setup

AMIBIOS SETUP – CHIPSET FEATURES SETUP
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*********DRAM Timing***		Memory Address Drive	24 mA
Top Performance	Disabled	CAS# Drive	12 mA
DRAM Frequency	100MHz	RAS# Drive	24 mA
SDRAM CAS# Latency	3		
AGP Mode	4X		
AGP Comp. Driving	Auto		
Manual AGP Comp. Driving	DB		
AGP Aperture Size	64MB		
PCI Delay Transaction	Enabled		
ClkGen Spread Spectrum	Enabled		
USB Controller	Enabled		
USB Legacy Support	Disabled		
BIOS Flash Protection	Disabled		
DRAM Drive Strength	Auto		
MD Bus Strength	High	ESC : Quit	↑↓→ ←: Select Item
CAS Bus Strength	High	F1 : Help	PU/PD+/-/ : Modify
Delay DRAM Read Latch	1.0ns	F5 :Old Values	(Shift)F2:Color
Memory Data Drive	8 mA	F6 : Load BIOS Defaults	
SDRAM Command Drive	24 mA	F7 : Load SETUP Defaults	

Figure 4: Chipset Features Setup

- **Top Performance**

Disabled	Top Performance Disabled. **(Default Value)**
Enabled	Top Performance Enabled.

- **DRAM Frequency**

100MHz	Set DRAM Frequency to 100MHz**(Default Value)**.
133MHz	Set DRAM Frequency to 133MHz

- **SDRAM CAS# Latency**

2	For Fastest SDRAM DIMM module.
3	For Slower SDRAM DIMM module. **(Default Value)**.
Auto	Detect SDRAM CAS# Latency by SPD.

- **AGP Mode**

4X	Set AGP Mode to 4X. **(Default Value)**
1X	Set AGP Mode to 1X.
2X	Set AGP Mode to 2X.

- **AGP Comp. Driving**

Auto	Set AGP Comp. Driving to Auto. **(Default Value)**
Manual	Set AGP Comp. Driving to Manual.

If AGP Comp. Driving is Manual.

Manual AGP Comp. Driving :	00~FF

- **AGP Aperture Size**

4MB	Set AGP Aperture Size to 4MB.
8MB	Set AGP Aperture Size to 8 MB.
16MB	Set AGP Aperture Size to 16 MB.
32MB	Set AGP Aperture Size to 32 MB.
64MB	Set AGP Aperture Size to 64 MB. **(Default Value)**
128MB	Set AGP Aperture Size to 128 MB.
256MB	Set AGP Aperture Size to 256 MB.

- **PCI Delay Transaction**

Enabled	Enabled Delay Transaction. **(Default Value)**
Disabled	Disabled Delay Transaction.

- **ClkGen Spread Spectrum**

Disabled	Disabled ClkGen Spread Spectrum.
Enabled	Enabled ClkGen Spread Spectrum. **(Default Value)**

- **USB Controller**

Enable	Enable USB Controller. **(Default Value)**
Disable	Disable USB Controller.

- **USB Legacy Support**

Keyboard/FDD	Set USB Legacy Support Keyboard / Floppy.
KB/Mouse/FDD	Set USB Legacy Support Keyboard / Mouse /Floppy.
Disabled	Disabled USB Legacy Support Function. **(Default Value)**

- **BIOS Flash Protection**

Enable	BIOS Flash Write Protection.
Disable	Normal. **(Default Value)**

- **DRAM Drive Strength**

Auto	Set DRAM Drive Strength to Auto.
Manual	Set DRAM Drive Strength to Manual.

If DRAM Drive Strength is Manual, then you can adjust item below.

- **MD Bus Strength**

High	Set MD Bus Strength to High.
Low	Set MD Bus Strength to Low.

- **CAS Bus Strength**

High	Set CAS Bus Strength to High.
Low	Set CAS Bus Strength to Low.

- **Delay DRAM Read Latch**

1.0ns	Set DRAM Read Latch Delay to 1.0ns.
1.5ns	Set DRAM Read Latch Delay to 1.5ns.
0.5ns	Set DRAM Read Latch Delay to 0.5ns.
No delay	Set DRAM Read Latch No delay.

- **Memory Data Drive**

6 mA	Set Memory Data Drive to 6 mA
8 mA	Set Memory Data Drive to 8 mA

- **SDRAM Command Drive**

16 mA	Set SDRAM Command Drive to 16 mA
24 mA	Set SDRAM Command Drive to 24 mA

- **Memory Address Drive**

16 mA	Set Memory Address Drive to 16 mA
24 mA	Set Memory Address Drive to 24 mA

- **CAS# Drive**

8 mA	Set CAS# Drive to 8 mA
12 mA	Set CAS# Drive to 12 mA

- **RAS# Drive**

16 mA	Set RAS# Drive to 16 mA
24 mA	Set RAS# Drive to 24 mA

Power Management Setup

AMIBIOS SETUP – POWER MANAGEMENT SETUP
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ACPI Sleep Type	S1/POS	RTC Alarm Date	Every Day
USB Dev Wakeup From S3~S5	Disabled	RTC Alarm Hour	00
Suspend Time Out(Minute)	Disabled	RTC Alarm Minute	00
Display Activity	Ignore	RTC Alarm Second	00
IRQ3	Monitor		
IRQ4	Monitor		
IRQ5	Ignore		
IRQ7	Monitor		
IRQ9	Ignore		
IRQ10	Ignore		
IRQ11	Ignore		
IRQ13	Ignore		
IRQ14	Monitor		
IRQ15	Ignore		
Soft-Off by Power Button	Instant-Off		
System after AC Back	Soft-Off	ESC : Quit	↑↓→ ←: Select Item
Modem Use IRQ	4	F1 : Help	PU/PD+/-/ : Modify
Resume On Ring/LAN	Enabled	F5 :Old Values	(Shift)F2:Color
PME Event Wake Up	Enabled	F6 : Load BIOS Defaults	
Resume On RTC Alarm	Disabled	F7 : Load SETUP Defaults	

Figure 5: Power Management Setup

- **ACPI Sleep Type**

S1/POS	Set ACPI sleep type to S1. **(Default Value)**
S3/STR	Set ACPI sleep type to S3.

- **USB Dev Wakeup From S3~S5**

USB Dev Wakeup From S3~S5 set when ACPI Sleep Type set to S3/STR.

Enabled	Enable USB Dev Wakeup From S3~S5.
Disabled	Disable USB Dev Wakeup From S3~S5 **(Default Value)**.

- **Suspend Time Out (Minute.)**

Disabled	Disabled Suspend Time Out Function. **(Default Value)**
1	Enabled Suspend Time Out after 1min.
2	Enabled Suspend Time Out after 2min.
4	Enabled Suspend Time Out after 4min.
8	Enabled Suspend Time Out after 8min.
10	Enabled Suspend Time Out after 10min.
20	Enabled Suspend Time Out after 20min.
30	Enabled Suspend Time Out after 30min.
40	Enabled Suspend Time Out after 40min.
50	Enabled Suspend Time Out after 50min.
60	Enabled Suspend Time Out after 60min.

- **Display Activity**

Ignore	Ignore Display Activity. **(Default Value)**
Monitor	Monitor Display Activity.

- **IRQ 3~IRQ15**

Ignore	Ignore IRQ3 ~IRQ15.
Monitor	Monitor IRQ3~IRQ15.

- **Soft-off by Power Button**

Instant-off	If the user press the power button once, he can turn off the system. **(Default Value)**
Delay 4 sec	The user needs to press the power button at least 4 sec, then he can turn off the system.

- **System after AC Back**

Memory	When AC-power back to the system, the system will return to the state before AC-power off.
Soft-Off	When AC-power back to the system, the system will be in "Soft-Off" state. **(Default Value)**
Full-On	When AC-power back to the system, the system will be in "Full-On" state.

- **Modem USE IRQ**

3, 4, **(Default Value)** 5, 7, N/A

- **Resume On Ring / LAN**

Disabled	Disabled Resume On Ring / LAN.
Enabled	Enabled Resume On Ring / LAN. **(Default Value)**

- **PME Event Wake Up**

Disabled	Disable PME Event Wake Up.
Enabled	Enabled PME Event Wake Up. **(Default Value)**

- **Resume On RTC Alarm**

You can set "Resume On RTC Alarm" item to enabled and key in Data/time to power on system.

Disabled	Disable this function. **(Default Value)**
Enabled	Enable alarm function to POWER ON system.

If RTC Alarm Lead To Power On is Enabled.

RTC Alarm Date :	Every Day,1~31
RTC Alarm Hour:	0~23
RTC Alarm Minute :	0~59
RTC Alarm Second :	0~59

PnP/PCI Configurations

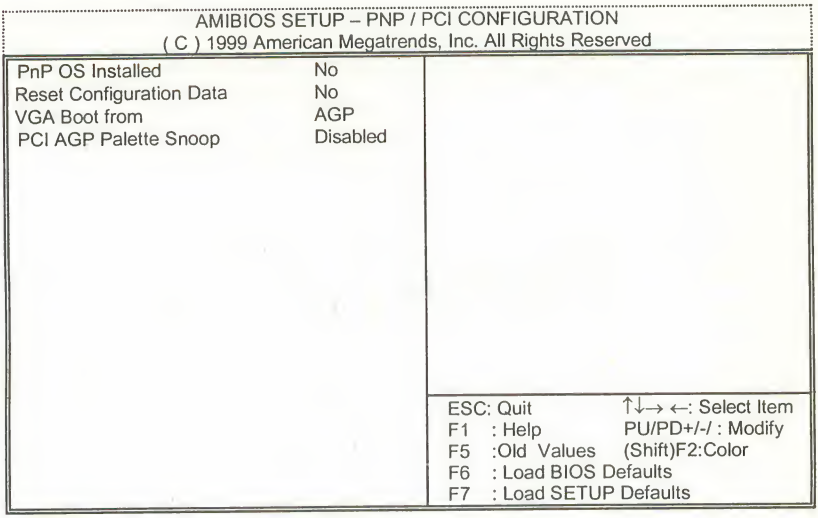


Figure 6: PnP/PCI Configuration

- **PnP OS Installed**

Yes	Enable PNP OS Installed function.
No	Disable PNP OS Installed function. **(Default Value)**

- **Reset Configuration Data**

No	Disable this function. **(Default Value)**
Yes	Clear PnP information in ESCD & update DMI data.

- **VGA Boot From**

AGP	Primary Graphics Adapter From AGP. **(Default Value)**
PCI	Primary Graphics Adapter From PCI.

- **PCI/VGA Palette Snoop**

Enabled	For having Video Card on ISA Bus and VGA Card on PCI Bus.
Disabled	For VGA Card only. **(Default Value)**

Load BIOS Defaults

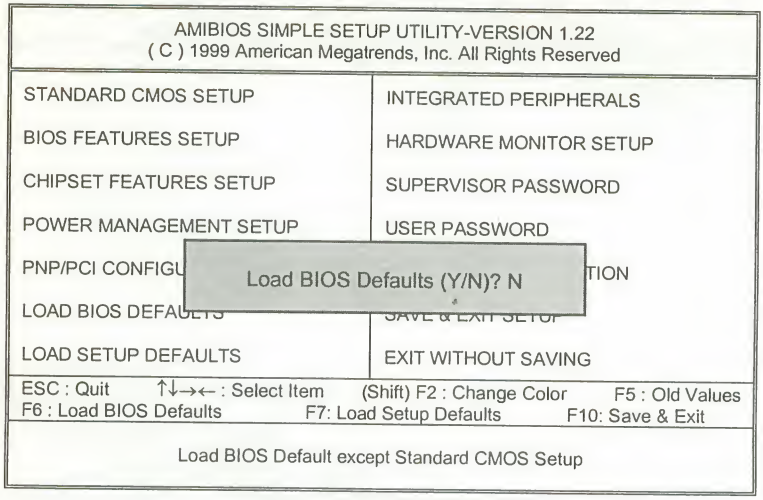


Figure 7: Load BIOS Defaults

- **Load BIOS Defaults**

  BIOS defaults contain the most appropriate values of the system parameters that allow minimum system performance.

Load Setup Defaults

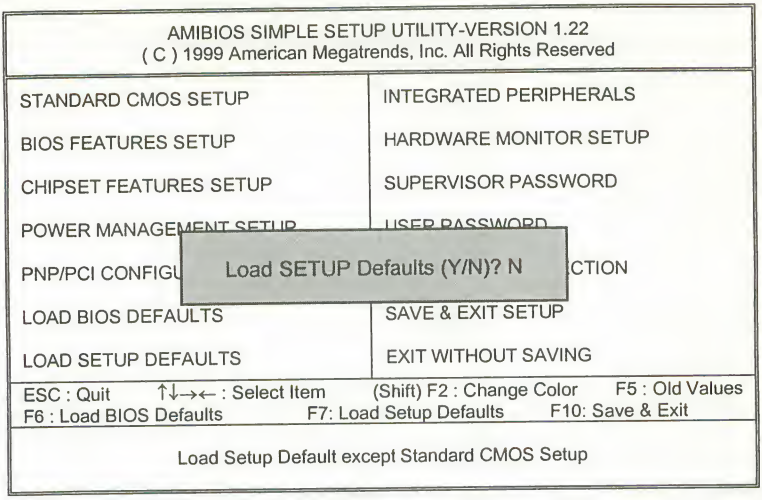


Figure 8: Load Setup Defaults

- **Load Setup Defaults**

  Selecting this field loads the factory defaults for BIOS and Chipset Features which the system automatically detects.

Integrated Peripherals

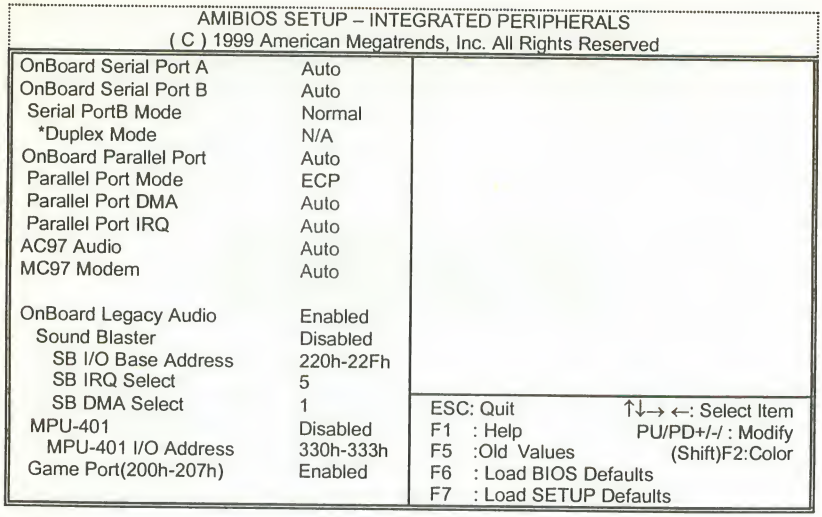


Figure 9: Integrated Peripherals

- **On Board Serial Port A**

Auto	BIOS will automatically setup the port A address. **(Default Value)**
3F8/COM1	Enable on Board Serial port A and address is 3F8.
2F8/COM2	Enable on Board Serial port A and address is 2F8.
3E8/COM3	Enable on Board Serial port A and address is 3E8.
2E8/COM4	Enable on Board Serial port A and address is 2E8.
Disabled	Disable on Board Serial port A.

- **On Board Serial Port B**

Auto	BIOS will automatically setup the port B address. **(Default Value)**
3F8/COM1	Enable on Board Serial port B and address is 3F8.
2F8/COM2	Enable on Board Serial port B and address is 2F8.
3E8/COM3	Enable on Board Serial port B and address is 3E8.
2E8/COM4	Enable on Board Serial port B and address is 2E8.
Disabled	Disable on Board Serial port B.

- **Serial Port B Mode**

Normal	Normal operation. **(Default Value)**
IrDA	Onboard I/O chip supports IRDA
ASK IR	Onboard I/O chip supports ASK IR.

- **Duplex Mode**

Half Duplex	IR Function Duplex Half.
N/A	Disabled this function **(Default Value)**.
Full Duplex	IR Function Duplex Full.

- **OnBoard Parallel port**

378	Enable On Board LPT port and address to 378.
278	Enable On Board LPT port and address to 278.
3BC	Enable On Board LPT port and address to 3BC.
Auto	Set On Board LPT port to Auto. **(Default Value)**
Disabled	Disable On Board LPT port.

- **Parallel Port Mode**

EPP	Using Parallel port as Enhanced Parallel Port.
ECP	Using Parallel port as Extended Capabilities Port. **(Default Value)**
Normal	Normal Operation.
EPP+ECP	Using Parallel port as Enhanced Parallel Port & Extended Capabilities Port.

- **Parallel Port DMA**

Auto	Set Auto to parallel port mode DMA Channel. . **(Default Value)**.
3	Set Parallel Port DMA to 3.
1	Set Parallel Port DMA to 1.
0	Set Parallel Port DMA to 0.

- **Parallel Port IRQ**

7	Set Parallel Port IRQ to 7.
Auto	Set Auto to parallel Port IRQ DMA Channel. . **(Default Value)**.
5	Set Parallel Port IRQ to 5.

- **AC97 Audio**

Auto	Enabled On Board AC'97 Audio. **(Default Value)**
Disabled	Disabled On Board AC'97 Audio.

- **MC97 Modem**

Auto	Enabled On Board MC'97 Modem. **(Default Value)**
Disabled	Disabled On Board MC'97 Modem.

- **OnBorard Legacy Audio**

Enabled	Enabled OnBoard Legacy Audio. **(Default Value)**
Disabled	Disabled OnBoard Legacy Audio.

- **Sound Blaster**

Enabled	Enabled Sound Blaster.
Disabled	Disabled Sound Blaster. **(Default Value)**

- **SB I/O Base Address**

220h-22Fh	Set SB I/O Base Address to 220h-22Fh. **(Default Value)**.
280h-28Fh	Set SB I/O Base Address to 280h-28Fh.
260h-26Fh	Set SB I/O Base Address to 260h-26Fh.
240h-24Fh	Set SB I/O Base Address to 240h-24Fh.

- **SB IRQ Select**

IRQ 9 / 5 / 7/ 10**(Default Value: 5)**.

- **SB DMA Select**

DMA 0 / 1 / 2/ 3**(Default Value: 1)**.

- **MPU-401**

Enabled	Enabled MPU-401.
Disabled	Disabled MPU-401. **(Default Value)**.

Ps. When Force back joystick is used, MPU-401 needs to be Enable.

- **MUP-401 I/O Address**

330h-333h	Set MUP-401 I/O Address to 330h-333h. **(Default Value)**.
300h-303h	Set MUP-401 I/O Address to 300h-303h.
310h-313h	Set MUP-401 I/O Address to 310h-313h.
320h-323h	Set MUP-401 I/O Address to 320h-323h.

- **Game Port (200h-207h)**

Disabled	Disabled Game Port (200h-207h)
Enabled	Enabled Game Port (200h-207h) **(Default Value)**.

Hardware Monitor

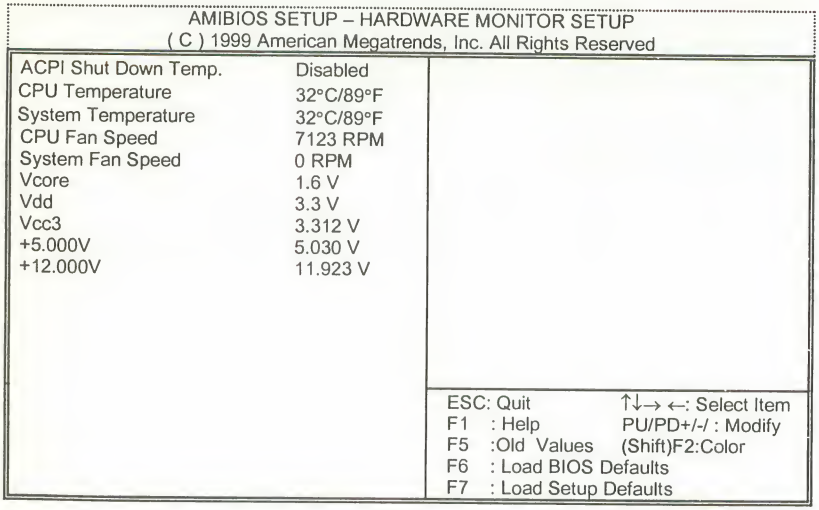


Figure 10: Hardware Monitor

- **ACPI Shutdown Temp. (°C / °F)**

(This function will be effective only for the operating systems that support ACPI Function.)

Disabled	Disable ACPI Shutdown function. **(Default Value)**
60°C / 140°F	Monitor CPU Temp. at 60°C / 140°F, if Temp. > 60°C / 140°F system will automatically power off.
65°C / 149°F	Monitor CPU Temp. at 65°C / 149°F, if Temp. > 65°C / 149°F system will automatically power off.
70°C / 158°F	Monitor CPU Temp. at 70°C / 158°F, if Temp. > 70°C / 158°F system will automatically power off.
75°C / 167°F	Monitor CPU Temp. at 75°C / 167°F, if Temp. > 75°C / 167°F system will automatically power off.

- **CPU Temperature. (°C / °F)**

Detect CPU Temperature automatically.

- **System Temperature. (°C / °F)**

Detect System Temperature automatically.

- **CPU FAN Speed**

  Detect CPU Fan speed status automatically .

- **System FAN Speed**

  Detect System Fan speed status automatically .

- **Voltage (V) Vcore / Vdd / Vcc3 / +5V / +12V**

  Detect system's voltage status automatically.

Set Supervisor / User Password

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

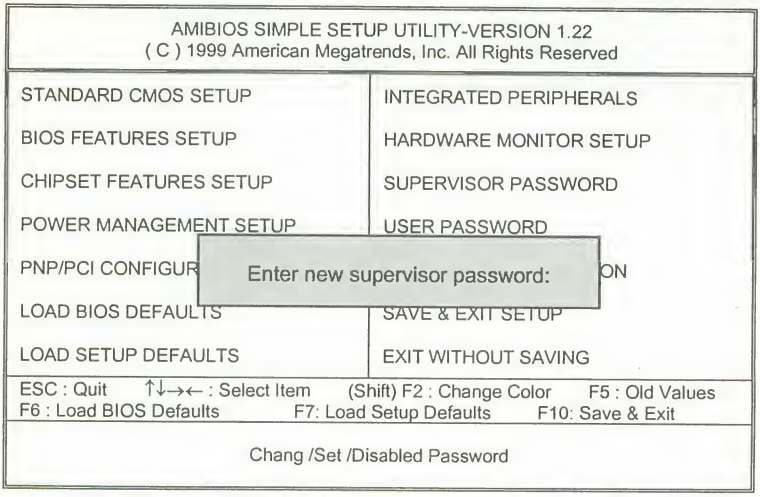


Figure 11: Password Setting

Type the password, up to eight characters, and press <Enter>. The password typed now will clear the previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message "PASSWORD DISABLED" will appear to confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

If you select "Always" at "Password Check" Option in BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup Menu. If you select "Setup" at "Password Check" Option in BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

IDE HDD AUTO Detection

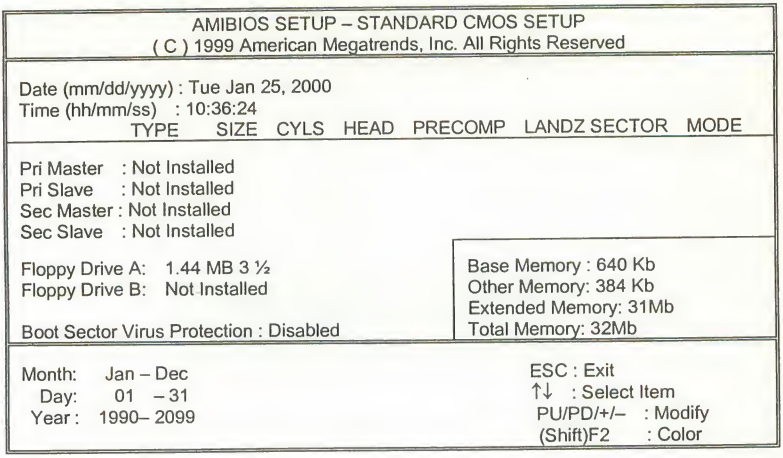


Figure 12: IDE HDD Auto Detection

Type "Y" will accept the H.D.D. parameter reported by BIOS.

Type "N" will keep the old H.D.D. parameter setup. If the hard disk cylinder number is over 1024, then the user can select LBA mode or LARGER mode for DOS partition larger than 528 MB.

Save & Exit Setup

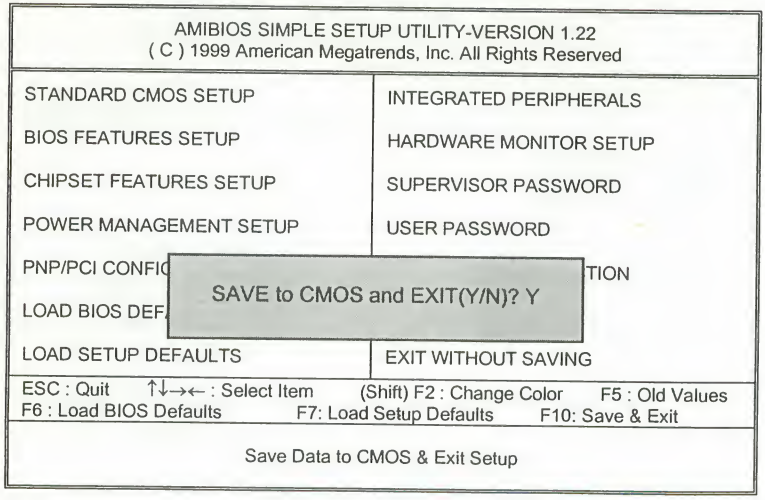


Figure 13: Save & Exit Setup

Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS.

Type "N" will return to Setup Utility.

Exit Without Saving

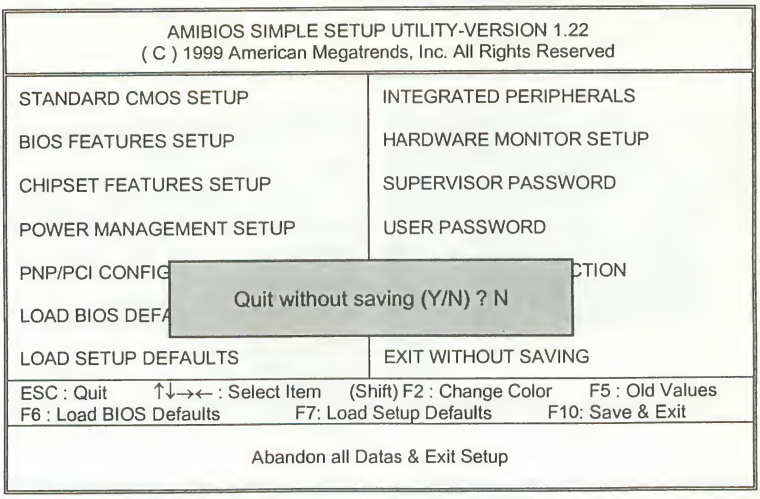


Figure 14: Exit Without Saving

Type "Y" will quit the Setup Utility without saving to RTC CMOS.

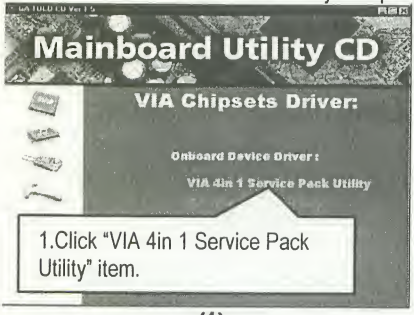
Type "N" will return to Setup Utility.

Appendix

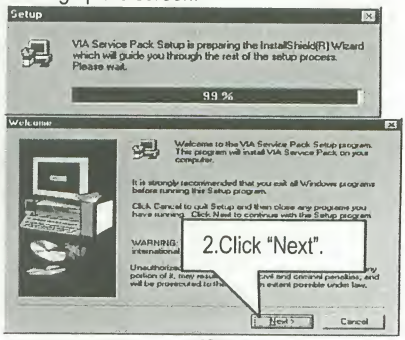
Appendix A : VIA Chipsets Driver Installation

A.VIA 4 in 1 Service Pack Utility:

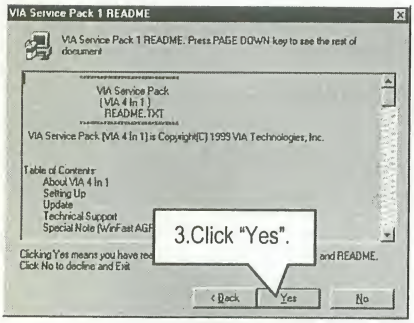
Insert the support CD that came with your motherboard into your CD-ROM driver or double –click the CD driver icon in My Computer to bring up the screen.



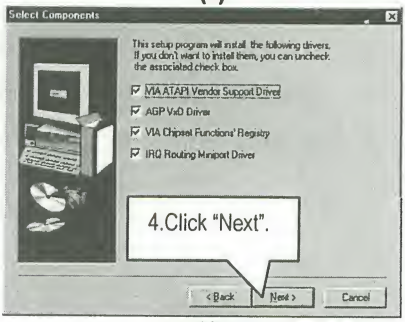
(1)



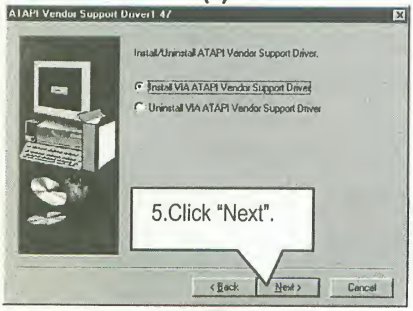
(2)



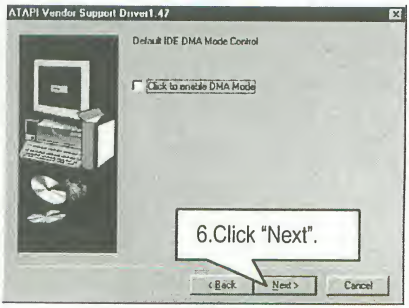
(3)



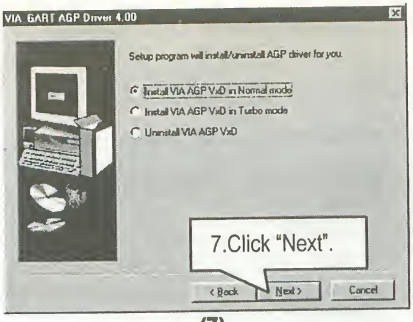
(4)



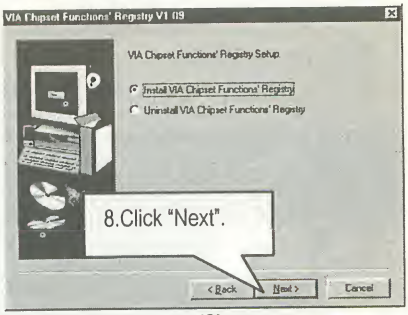
(5)



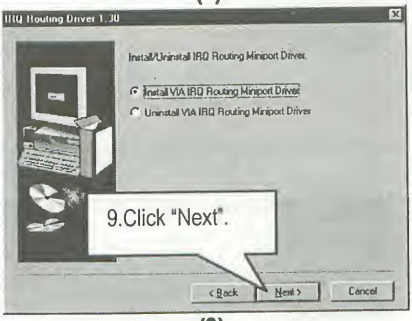
(6)


VIA GART AGP Driver 4.00
Setup program will install/uninstall AGP driver for you.
Install VIA AGP VxD in Normal mode
Install VIA AGP VxD in Turbo mode
Uninstall VIA AGP VxD
7.Click "Next".
< Back
Next >
Cancel

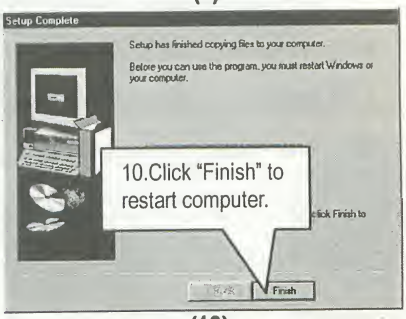
(7)


VIA Chipset Functions' Registry V1.09
VIA Chipset Functions' Registry Setup
Install VIA Chipset Functions' Registry
Uninstall VIA Chipset Functions' Registry
8.Click "Next".
< Back
Next >
Cancel

(8)


IRQ Routing Driver 1.30
Install/Uninstall IRQ Routing Miniport Driver.
Install VIA IRQ Routing Miniport Driver
Uninstall VIA IRQ Routing Miniport Driver
9.Click "Next".
< Back
Next >
Cancel

(9)

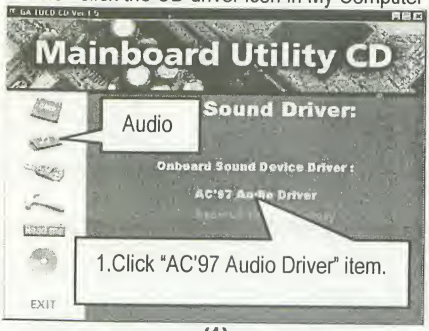

Setup Complete
Setup has finished copying files to your computer.
Before you can use the program, you must restart Windows or your computer.
10.Click "Finish" to restart computer.
Finish

(10)

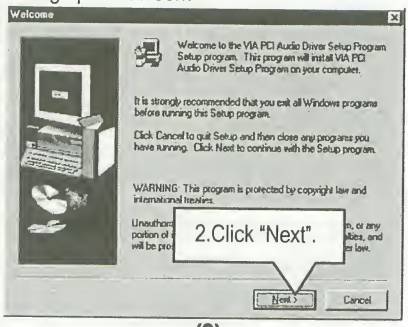
Appendix B: VIA Sound Driver

A. AC'97 Audio Driver:

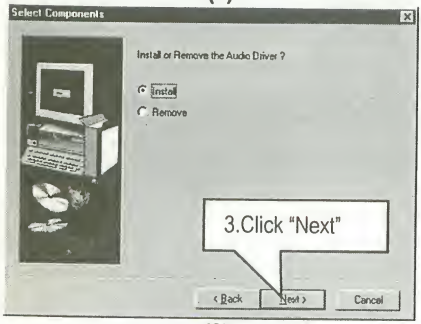
Insert the support CD that came with your motherboard into your CD-ROM driver or double –click the CD driver icon in My Computer to bring up the screen.



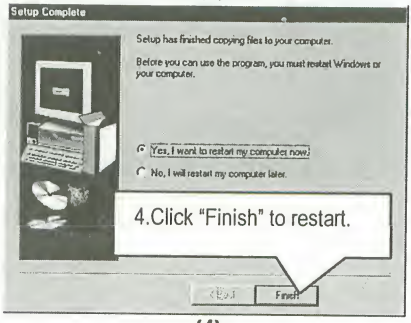
(1)



(2)



(3)



(4)

Appendix C: BIOS Flash Procedure

BIOS update procedure:

- ✓ Please check your BIOS vendor (AMI or AWARD) on the motherboard.
- ✓ It is recommended you copy the AWDFlash.exe or AMIFlash.exe in driver CD (D:\>Utility\BIOSFlash) and the BIOS binary files into the directory you made in your hard disk. 【i.e:C:\>Utility\ (C:\>Utility : denotes the driver and the directory where you put the flash utilities and BIOS file in.)】
- ✓ Restart your computer into MS-DOS mode or command prompt only for Win95/98, go into the directory where the new BIOS file are located use the utility AWDFlash.exe or AMIFlash.exe to update the BIOS.
- ✓ Type the following command once you have enter the directory where all the files are located C:\utility\ AWDFlash or AMIFlash <filename of the BIOS binary file intended for flashing>
- ✓ Once the process is finished, reboot the system

Note: Please download the newest BIOS from our website (www.gigabyte.com.tw) or contact your local dealer for the file.

Appendix D: Issues To Beware Of When Installing AMR

Please use inverse AMR card like the one in order to avoid mechanical problem. (See Figure A)

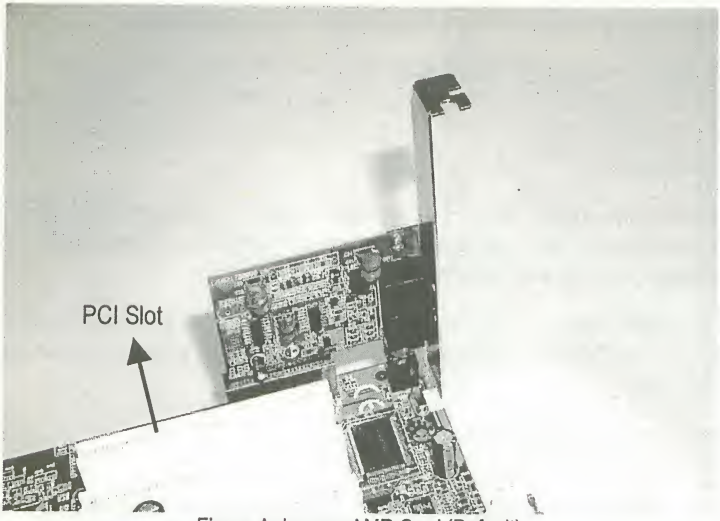


Figure A: Inverse AMR Card (Default)

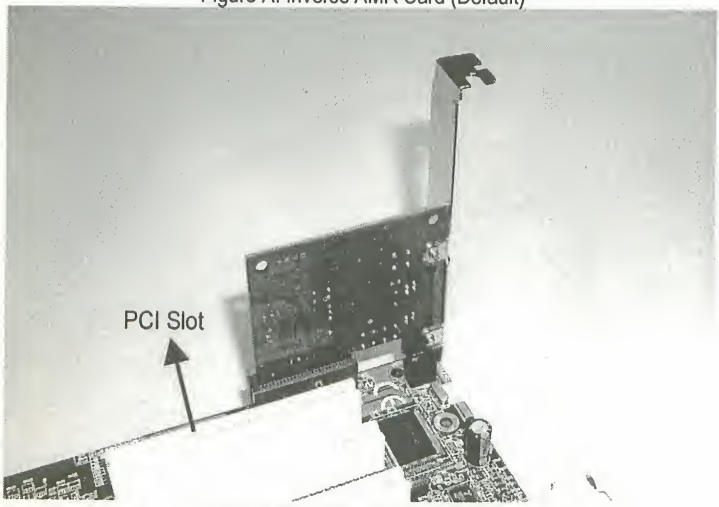


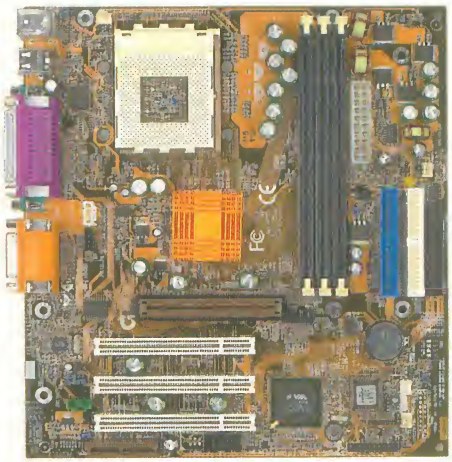
Figure B: Non inverse AMR Card

Appendix E: Acronyms

Acor.	Meaning
ACPI	Advanced Configuration and Power Interface
POST	Power-On Self Test
LAN	Local Area Network
ECP	Extended Capabilities Port
APM	Advanced Power Management
DMA	Direct Memory Access
MHz	Megahertz
ESCD	Extended System Configuration Data
CPU	Central Processing Unit
SMP	Symmetric Multi-Processing
USB	Universal Serial Bus
OS	Operating System
ECC	Error Checking and Correcting
IDE	Integrated Dual Channel Enhanced
SCI	Special Circumstance Instructions
LBA	Logical Block Addressing
EMC	Electromagnetic Compatibility
BIOS	Basic Input / Output System
SMI	System Management Interrupt
IRQ	Interrupt Request
NIC	Network Interface Card
A.G.P.	Accelerated Graphics Port
S.E.C.C.	Single Edge Contact Cartridge
LED	Light Emitting Diode
EPP	Enhanced Parallel Port
CMOS	Complementary Metal Oxide Semiconductor
I/O	Input / Output
ESD	Electrostatic Discharge
OEM	Original Equipment Manufacturer
SRAM	Static Random Access Memory
VID	Voltage ID
DMI	Desktop Management Interface
MIDI	Musical Interface Digital Interface
IOAPIC	Input Output Advanced Programmable Input Controller
DIMM	Dual Inline Memory Module
DRAM	Dynamic Random Access Memory
PAC	PCI A.G.P. Controller
AMR	Audio Modem Riser

To be continued...

Acor.	Meaning
PCI	Peripheral Component Interconnect
RIMM	Rambus in-line Memory Module
DRM	Dual Retention Mechanism
ISA	Industry Standard Architecture
MTH	Memory Translator Hub
CRIMM	Continuity RIMM



GA-7ZM

7ZM0000529#